REMARKS

Claims 1 and 4-14 remain in the application.

The Rejections:

In the Final Office Action dated December 7, 2007, the Examiner rejected Claims 1, 4-8, 10, 11, 13 and 14 under 35 U.S.C. 103(a) as being unpatentable over Baranda (WO 99/43589) in view of Kinoshita (US-5891561) in further view of Danhauer (US 2002/0098935).

Referring to Claims 1 and 4-6, the Examiner stated that Baranda discloses: an "Elevator System Having Drive Motor Located Between Elevator Car and Hoistway Sidewall" as claimed (See Figs. 1-8 and respective portions of the specification); a drive motor (42) mounted at a head of an elevator shaft and having a drive pulley; an elevator car (16) movable in the elevator shaft; a counterweight (48) movable in the elevator shaft and arranged laterally of the elevator car (See Pg. 2 - Pg. 31. 17 & Fig. 2); and a flat-belt-like support means supporting the elevator car by under looping and engaging the drive pulley. The Examiner commented that Baranda does not disclose the support means being a wedge-ribbed belt having a running surface facing the drive pulley and a plurality of ribs and grooves formed with an angle in the range of 80 to 100 degrees in the running surface and extending in parallel in a longitudinal direction of the support means.

According to the Examiner, Kinoshita discloses a "Power Transmission Belt With Load Carrying Cord" (See Figs. 1- 3 and respective portions of the specification) and a wedge-ribbed belt (10) with ribs and grooves being one of triangular-shaped and trapezium-shaped in cross section (See at least Col. 31. 12-30 and at least Fig. 1). According to the Examiner, Danhauer discloses a belt (10) with a plurality of ribs and grooves formed in the running surface and extending in parallel in a longitudinal direction on the support means (See Sect. 0017 & Figs. 1-2), and Danhauer discloses that the belt (10) is provided with a plurality of transverse grooves (34) (See Sect. 0025) and that the grooves are provided at an inclined angle. Additionally, the Examiner noted that the belt (10) has at least two wedge-ribbed belt strands arranged in parallel (See Figs. 1-2), and it would have been obvious to a person of ordinary skill in the art to modify the apparatus of Baranda to include the teachings of Danhauer and provide a wedge-ribbed belt with a plurality of ribs and grooves formed in the running surface as well as transverse grooves

and ribbed strands formed at an inclined angle as taught by Kinoshita and Danhauer so that the belt could provide better traction, increased flexibility, running quietness, and a higher load capacity.

Referring to Claim 7, the Examiner commented that Baranda does not disclose that the drive pulley has an external diameter in a range of 70 to 100 millimeters, but it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Baranda to include drive pulleys that were in the range of 70 to 100 millimeters so that greater torque and lifting capacity could be achieved.

Referring to Claim 8, the Examiner stated that Baranda discloses that the car guide rail (60,64) is mounted on two opposite sides of the elevator car and two counterweight guide rails (62,66) mounted on a counterweight side of the elevator car and the drive motor with the drive pulley being mounted on a motor carrier (36) attached to one of the car guide rails and to the two counterweight guide rails (See Pg. 4 - Pg 5 l. 23 & Figs. 1-2).

Referring to Claim 10, the Examiner stated that Baranda discloses an elevator wherein said drive motor and said drive pulley are mounted above a space in the elevator shaft taken up by said elevator car, a plane of said drive pulley being arranged vertically and at right angles to a car wall at a counterweight side of said elevator car and approximately in a middle of a car depth of said elevator car, a vertical projection of said drive pulley onto said counterweight side of said elevator car being outside a vertical projection of said counterweight side, and a part of a vertical projection of said drive motor being superimposed on said vertical projection of said counterweight side of said elevator car (See Figs. 1-2).

Referring to Claims 11, 13 and 14, the Examiner stated that Baranda discloses an elevator system wherein the belt extends from a support means fixing point below said drive pulley and in a region of a vertical projection of said drive pulley, downwardly to a side, which faces said elevator car of a periphery of a counterweight support roller, loops around said counterweight support roller, extends to a side remote from said elevator car of a periphery of said drive pulley, loops around said drive pulley and runs downwardly along a car wall at a counterweight side of said elevator car, loops by 90 around a respective car support roller mounted below said elevator car on each of two sides of said elevator car and runs along a car wall remote from said

counterweight upwardly to a second support means fixing point in the elevator shaft. The Examiner stated that Baranda further discloses an elevator system having a drive motor mounted at the head of the elevator shaft and having a drive pulley for engaging the support, comprising a belt adapted to support the elevator car by underlooping and engaging the drive pulley. The Examiner commented that Baranda does not disclose that the belt is wedge-ribbed belt that has a running surface adapted to face the drive pulley and a plurality of substantially triangular-shaped and trapezium shaped ribs and grooves formed in the running surface and extending in parallel in a longitudinal direction of the belt, but Danhauer discloses the belt is a wedge-ribbed belt that has a running surface adapted to face the drive pulley and a plurality of ribs and grooves formed in the running surface and extending in parallel in a longitudinal direction of the belt (See at least Fig. 1), Danhauer discloses that the belt (10) is provided with a plurality of transverse grooves (34) (See Sect. 0025) and that the grooves are provided at an inclined angle, and it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus to include a belt as taught by Danhauer and Kinoshita so that greater traction and running quietness could be achieved as well as a higher load capacity.

The Examiner rejected Claim 9 under 35 U.S.C. 103(a) as being unpatentable over Baranda in view of Danhauer, and in further view of Faletto (6471012). The Examiner commented that Baranda does not disclose a brake unit mounted on the motor carrier for acting upon the drive pulley. The Examiner stated that Faletto discloses: a "Pulley System For A Traction Sheave Elevator" as claimed (See Figs. 1-2 and respective portions of the specification); a brake acting on a drive pulley to prevent rope movement; and that the brake could be positioned to act on the rope, on a pulley mounted on the elevator car, or on an auxiliary pulley (See Col. 51.9-14). The Examiner stated that it should be noted that it is generally known in the field of art to provide a brake to act on the drive pulley to prevent movement, and it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Baranda to include a brake unit to act on the drive pulley to prevent movement in order to slow and stabilize the elevator car.

The Examiner rejected Claim 12 under 35 U.S.C. 103(a) as being unpatentable over Baranda in view of Dauer, and in further view of Saito (US-5025893). The Examiner

commented that Baranda does not disclose that the guide roller mounted at the bottom of the elevator car and engaging the wedge-ribbed belt, in which the guide roller has a plurality of ribs and grooves engaging the ribs and grooves of the wedge-ribbed belt for guidance of the wedge-ribbed belt. The Examiner stated that Saito discloses: a "Vibration Suppressing Device For Elevator" (See Figs. 1- 5 and respective portions of the specification); guide rollers (11,12) having a plurality of ribs and grooves for engaging the ribs and grooves of the rope for guidance of the rope (See at least Col. 2 l. 45 - 66, Col. 3 l. 25 - 30 & at least Figs. 4-5), and it would have been obvious to a person of ordinary skill in the art at the time of the invention in view of Saito to modify the apparatus of Baranda to include guide rollers that had a plurality of ribs and grooves that engaged the ribs and grooves of the belt so that a elevator could receive greater traction and a higher load capacity.

The Response:

The Examiner again rejects independent Claims 1 and 13 as being unpatentable over Baranda in view of Kinoshita and in further view of Danhauer. In response to Applicant's arguments in the previous Amendment, the Examiner stated that Applicant's focus on "grooves being formed with lateral flanks at an angle in a range between 80° to 100°" is unpersuasive because Dauer teaches that it is known in the art to provide grooves with lateral flanks formed at an inclined angle and it would have been have been obvious to one having ordinary skill in the art at the time of the invention to provide the grooves formed with lateral flanks at an angle in a range of 80° to 100°, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art to which it would have been obvious to do so in order to increase traction capability, running quietness, and load capacity.

This is not a case of "adjustability". Applicant notes that the Examiner has failed to cite any art showing a wedge-ribbed belt having lateral flanks arranged with an angle in the range recited in Applicant's claims. There is a reason for this failure to locate such prior art. Generally known and available wedge-ribbed belts (also called poly-v belts) have ribs and grooves with lateral flanks arranged at a wedge angle in a range of 35° to 40°. See the attached two data sheets. Applicant is unable to find any documents showing wedge-ribbed belts having wider

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wedge angles between the flanks of their ribs and grooves, and has not found single v-belts having wedge angles of more than 60°.

The wedge-ribbed belts according to the claimed invention, having wedge angles between the flanks of their ribs and grooves in a range of 80° to 100°, are the result of extensive research and test work in order to find an optimum belt for suspending and driving elevator cars. Findings resulting from said research and test work include:

1. A wedge-ribbed elevator belt made from elastomeric material and having ribs with an edge angle smaller than 80° to 100° may cause the following problems:

- the tensioned belt running about a belt sheave generates a high noise level due to the fact that the ribs are strongly being jammed between the flanks of the corresponding grooves of the sheave.
- due to said jamming effect, there is the risk that the drive sheave of the elevator further lifts the elevator car (respectively the counterweight) if, due to a control failure, the counterweight (respectively the elevator car) strikes its lower limit stop.

2. If the wedge-ribbed elevator belt has ribs with the angle being bigger than 80° to 100°:

- the lateral guiding of the belt on its sheaves isn't guaranteed; i.e. there is a high risk of derailment of the belt from the sheaves.
- the required traction (friction) between the drive sheave and the wedge-ribbed belt may not be reached.

As stated in Applicant's specification on Page 8, at Lines 12-22:

> In the case of the embodiment **12.1** according to Fig. 3, ribs **23.1** and grooves **24.1** have a triangular cross-section. In the case of the embodiment **12.2** according to Fig. 4, ribs **23.2** and grooves **24.2** have a trapezium-shaped cross-section. An angle "**b**" present between the flanks of a rib or a groove influences the operating characteristics of a wedge-ribbed belt, particularly the running quietness thereof and the traction capability thereof. Tests have shown that it is applicable within certain limits that the larger the angle "**b**", the better the running quietness and the worse the traction capability. Advantageous properties with respect to running quietness and traction capability have been achieved

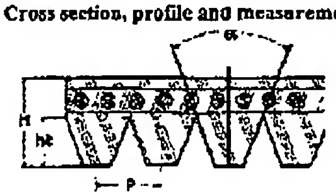
simultaneously if the angle "**b**" lies between 80° and 100°. An optimum compromise between the opposing requirements is achieved by wedge-ribbed belts in which the angle "**b**" lies at approximately 90°.

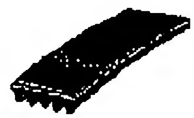
Thus, one of ordinary skill in the art would not increase the angle from the typical range of 35° to 40° since it is known that there would be a loss of traction capability. For these reasons, Applicant is firmly convinced that the cited prior art would not lead a person having ordinary skill in the art to provide a wedge-ribbed elevator belt having ribs and grooves formed with lateral flanks at an angle in a range of 80° to 100°.

The Examiner stated that the prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The Examiner cited Heinz (US-2003/0121729) as disclosing a "Lift Belt System" comprising a belt with grooves being one of triangular-shaped and trapezium-shaped in cross section and being formed with lateral flanks at an angle and cited: Nakajima et al. (5387160); Hein (5944144); and Kitano et al. (6056656). Applicant reviewed these references and found them to be no more pertinent than the prior art relied upon by the Examiner in the rejections.

In view of the above arguments, Applicant believes that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.

Cross section, profile and measurement of Poly-v belt





profile	pitch: P	height: ht	height of belt: H	angle of rib:
H	1.6	1.1	3.0 ± 0.15	40° ± 2°
J	2.34	1.8	3.9 ± 0.25	40° ± 2°
K	3.56	2.4	5.5 ± 0.30	40° ± 2°
L	4.7	4.6	9.0 ± 0.40	40° ± 2°
M	9.4	9.4	16.0 ± 0.60	40° ± 2°

EXAMPLE ILLUSTRATIONS

550 H 4

The belt has 4 ribs.

The cross section is H profile

Effective length is 55 inch

4 H 1750

Effective length is 1750 mm

The cross section is H profile

The belt has 4 ribs.

Profile H series

Metric No.	Part No.	Metric No.	Part No.	Metric No.	Part No.
H 519	204 H	H 979	385 H	H 1549	610 H
H 536	211 H	H 990	390 H	H 1552	611 H
H 556	219 H	H 999	393 H	H 1565	616 H
H 581	229 H	H 1015	400 H	H 1596	628 H
H 600	236 H	H 1043	411 H	H 1627	641 H
H 614	242 H	H 1065	419 H	H 1635	644 H
H 622	245 H	H 1081	426 H	H 1659	653 H
H 638	251 H	H 1083	427 H	H 1678	661 H
H 644	254 H	H 1090	429 H	H 1744	687 H
H 657	259 H	H 1093	430 H	H 1750	689 H
H 668	263 H	H 1106	435 H	H 1806	711 H
H 679	267 H	H 1137	448 H	H 1841	725 H
H 691	272 H	H 1150	453 H	H 1863	733 H

Roloff / Matek 16.Auflage

TB 16-14 Keilrippenriemen und Keilrippenscheiben nach DIN 7867
(Tabellenwerte in Anlehnung an DIN 7867 und Werksangaben)

Keilrippenriemen nach DIN 7867	Profil-Kurzzeichen		PH	PJ	PK	PL	PM
	Rippenabstand	s	1,60 ± 0,2	2,34 ± 0,2	3,56 ± 0,2	4,70 ± 0,2	9,40 ± 0,2
	Riemenhöhe	h max[1]	3	4	6	10	17
	Anzahl der Rippen	z[2]	2…31	2…50	2…50	2…60	2…45
	Riemenbreite	b	$b = s \cdot z$				
	Rippengrundradius	r_g max	0,15	0,20	0,25	0,40	0,75
	Rippenkopfradius	r_k min	0,30	0,40	0,50	0,40	0,75
	Standard-Richtlänge L_d[2]	min	559	330	559	954	2286
		max	2155	2489	3492	6096	15266
	zul. Riemengeschwindigkeit	v max[2]	60 m/s	50 m/s	50 m/s	40 m/s	30 m/s
Keilrippenscheiben nach DIN 7867	Profil-Kurzzeichen		H	J	K	L	M
	Rillenabstand	e	1,60 ± 0,03	2,34 ± 0,03	3,56 ± 0,05	4,70 ± 0,05	9,40 ± 0,08
	Gesamtabstand	c	c = (Rippenanzahl $n - 1$) e Toleranz für c: ±0,30				
	Richtdurchmesser	$d_{d\,min}$	13	20	45	75	180
		Stufung	nach DIN 323 Normzahlreihe R20 (s. TB 1-16)				
	Innenradius	$r_{i\,max}$	0,30	0,40	0,50	0,40	0,75
	Außenradius	$r_{a\,min}$	0,15	0,20	0,25	0,40	0,75
	Profiltiefe	t_{min}[2]	1,33	2,06	3,45	4,92	10,03
	Randabstand	f_{min}	1,3	1,8	2,5	3,3	6,4
	Wirkdurchmesser	d_w	$d_w = d_d + 2h_b$				
	Bezugshöhe	h_b	0,8	1,25	1,6	3,5	5,0

[1] Maße nach Wahl des Herstellers
[2] Hersteller-Angaben: vorzugsweise nach DIN 323 R'40

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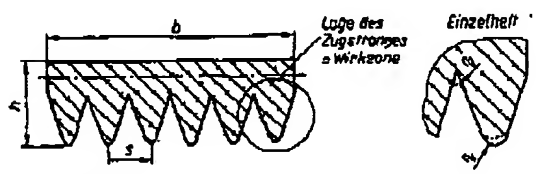

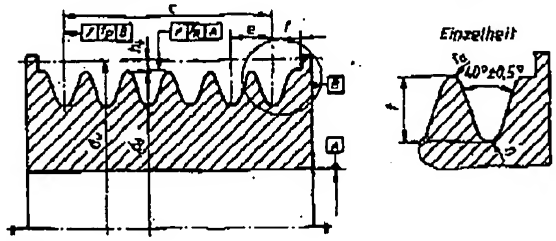

$d_d \ldots 74$ mm: $f_R = 0{,}13$ mm
$d_d > 74 \ldots 250$ mm: $f_R = 0{,}25$ mm
$d_d > 250$ mm: $f_R = 0{,}25$ mm $+ 0{,}004$ je mm Bezugs-Ø über 250 mm
$f_p = 0{,}002 \cdot d_d$